Review Comments on the Evraz Oregon Steel 2015 Beach and Riverbank Groundwater Monitoring Report Document Dated August 6, 2015

Submitted October 15, 2015

Following are the United States Environmental Protection Agency's (EPA) comments on the August 6, 2015 document entitled, EVRAZ Oregon Steel 2015 Beach and Bank Groundwater Monitoring Report, in Portland, Oregon. EPA understands the objectives of this report, prepared by Integral Consulting Inc., were to describe the results from the January 2015 resampling of six wells that may have been affected by a leaking river water line during the September 2012 sampling event. The resampling was supposed to take place when the MW-13 river bank well met the following criteria:

- Stabilized groundwater pH below 7
- Stabilized groundwater conductivity above 500 µmhos/cm
- Stabilized groundwater temperature similar (+/- 20%) to events before September 2012
- Groundwater elevation in MW-13 down to within 1.5 ft of pre-leak measurements.

General Comments

- Water quality parameters in MW-13 deviate considerably from the targeted criteria listed at the top of page 3 of this report. There appears to be a considerable shift in groundwater chemistry at this well from 2012 to the present based on evaluation of pH, conductivity, temperature, and groundwater elevation. For example, pH has been elevated to over 8 standard units since the leak occurred, and has increased to over 9 since the leak was fixed. At a pH of 8 or greater, manganese can precipitate to solid form (mineralize) which would explain the reduction in dissolved manganese concentrations. In addition, elevated pH levels may also explain why the conductivity is less than half of pre-leak conditions. Depending on the source of the elevated pH and how long it persists, there may be significant increases in dissolved manganese concentrations if the pH were to eventually return to pre-leak conditions. It is also concerning that 3 years after the leak is repaired, fall and winter groundwater elevations and temperatures remain elevated relative to the September and December 2005 groundwater elevations and temperature. These results suggest that MW-13 is being influenced by conditions that were not present during the September and December 2005 monitoring events that represent conditions before the 2012 leak. EOS should conduct further monitoring and evaluation of MW-13 to identify the conditions that are contributing to the elevated pH levels and whether there might be another leak of surface water to groundwater.

Specific Comments

1. Page 7, "Groundwater Quality Discussion" section, second paragraph: The report states that "Groundwater from beach wells is considered equivalent to TZW." EOS should provide information to support the assertion that water quality conditions in beach wells should be

considered “equivalent” to TZW. EPA disagrees that groundwater characteristics in beach wells are equivalent to oxygen rich, biologically active, TZW in shallow sediments offshore due to regular mixing with surface water, physical mixing of the sediment bed, and bioturbation. Beach wells MW-17, MW-18, and MW-23, in contrast to what would be expected in TZW, all had dissolved oxygen below 1 mg/L during each event when DO was measured.

2. Page 8, first paragraph: The report states that EPA draft PRG and the lower JSCS SLV for arsenic (As) are both below background concentrations measured up-gradient of the site as well as regional background levels. Although true, beach wells are consistently elevated in As relative to the up-gradient background concentrations observed in MW-22. While the document reports that surface water samples collected offshore of the EOS site suggest that groundwater discharges from the EOS site are not adversely affecting the water column, it is impossible to determine what the benthic impact is without evaluating actual TZW off shore of the EOS site.

3. Page 9, “Manganese” section, first paragraph: The report states that EPA draft PRG for manganese is based on inapplicable secondary drinking water standards. However, the applicable PRG for manganese is 120 µg/L which is focused on reducing migration of COCs in groundwater to sediment and surface water such that levels are acceptable in sediment and surface water for ecological exposure. Similarly, the JSCS SLV for protection of ecological receptors is also 120 µg/L. This is the appropriate criteria for evaluating risks to the benthic community associated with groundwater discharges from the EOS site.

4. Page 11, “Summary” section, second bullet: The report states that concentrations in MW-10 are consistent with pre-leak concentrations; however, there is no discussion on how the pre-leak conditions in this well may impact the Willamette River. The 2015 results for As in MW-10 are an order of magnitude higher than the site’s up-gradient background well MW-22. In addition, unlike many of the other bank wells, there is not a beach well directly downgradient of MW-10, so it is difficult to determine if there is a significant decrease in groundwater concentrations of arsenic by the time groundwater reaches the Willamette River in this location. EOS should include a discussion on wells that have recovered to pre-leak concentrations that are considerably elevated to the site background, specifically elevated As in MW-10.

5. Figure 2 shows that a sample was collected at MW-19 in 2015. The symbol for MW-19 should be modified to reflect that this sample was collected in 2012.